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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/806,155	03/23/2004	Takashi Hasebe	02860.0784	1952

22852 7590 04/04/2006

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EXAMINER	
LIANG, LEONARD S	

ART UNIT	PAPER NUMBER
2853	

DATE MAILED: 04/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/806,155	HASEBE ET AL.	
	Examiner	Art Unit	
	Leonard S. Liang	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 March 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification and Drawings

The lengthy specification and drawings have not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification and drawings. Specifically, the applicant is required to match all references in the drawings to the references in the specification.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morgavi (US Pat 6562413).

Morgavi discloses:

- {claim 1} An image printing apparatus (figure 2); a conveyance-printing section wherein printing is performed onto the recording medium sheet while a recording medium sheet is conveyed (figure 2, reference 20); black printing head mounted above the conveyance-printing section, and aligned perpendicular to a conveyance direction of the recording medium sheet, to jet image-setting black ink drops onto the recording medium sheet for printing from above (figure 2,

reference 21-24; column 2 lines 1-7; naturally suggested that any one of references 21-24 can be black); a plurality of color printing heads which are mounted above the conveyance-printing section, and are aligned perpendicular to the conveyance direction of the recording medium sheet, to jet image-setting color ink drops onto the recording medium sheet for printing from above (figure 2, reference 21-24; column 2, lines 1-7; naturally suggested that any one of refs 21-24 can be color); a first light radiating device which is mounted above the conveyance-printing section, and is arranged downstream of the black printing heads with respect to the conveyance direction of the recording medium sheet, and which radiates ultraviolet rays to harden the image-setting black ink drops landed onto the recording medium sheet (figure 2, reference 25-28); a second light radiating device which is mounted above the conveyance-printing section, and is arranged downstream of the color printing heads with respect to the conveyance direction of the recording medium, and which radiates the ultraviolet rays to harden the image-setting color ink drops landed onto the recording medium sheet (figure 2, reference 25-28)

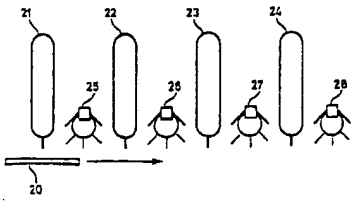

Fig. 2

- {claim 2} wherein the first light radiating device is arranged downstream of the black printing heads and upstream of the color printing heads, with respect to the conveyance direction of the recording medium sheet, and wherein the first light

radiating device radiates ultraviolet rays to harden the image-setting black ink drops landed onto the recording medium sheet, before the image-setting color ink droplets are jetted onto the recording medium sheet (figure 2, reference 21-28; assuming that reference 21 represents the black printing heads and reference 25 represents the first light radiating device)

- {claim 3} wherein the second light radiating device is arranged downstream of the color printing heads, and upstream of the black printing heads, with respect to the conveyance direction of the recording medium sheet, and wherein the second light radiating device radiates ultraviolet rays to harden the image-setting color ink drops landed onto the recording medium sheet, before the image-setting black ink droplets are jetted onto the recording medium sheet (figure 2, reference 21-28; assuming that reference 24 represents the black printing heads, references 21-23 represent the color printing heads, and reference 27 represents the second light radiating device)

Morgavi does not explicitly disclose:

- {claim 1} a plurality of black printing heads (rather Morgavi discloses a single reservoir that ejects ink)
- {claim 4} wherein energy of the ultraviolet rays radiated from the second light radiating device onto the image-setting color ink drops is greater than energy of the ultraviolet rays radiated from the first light radiating device onto the image-setting black ink drops

Morgavi discloses:

- {claim 1} figure 2 is a known technique of printing using cross-linkable UV ink (column 1, lines 54-56)
- {claim 4} colored dots formed by three or four ink elementary dots or primary colors of black (column 6, lines 20-22); modulating ray intensity based on ink volume (column 6, lines 33-45)

With respect to claim 1, figure 2 was meant only as an illustration of what's known in the art and is directed to the use of ink ejection in conjunction with UV radiation. It is naturally suggested that the exact form of ink ejection can take the form of any number of well known ejection methods (such as using either a single print head to represent the black ink reservoir or using a plurality of print heads (for reference, see teaching references Silverbrook et al (US Pat 6428142) and Madeley (US Pat 6637860))).

With respect to figure 4, it is naturally suggested that the color ink drops, being formed of multiple drops of elementary dots or primary colors of black, will occupy a greater volume of ink than just the regular black ink drops. As such, it is also naturally suggested that the radiating device will be modulated to a higher degree of intensity for the color drops than for the black drops.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Morgavi. The motivation for the skilled artisan in doing so is to gain the benefit of cross-linking photosensitive inks by ultraviolet radiation (abstract).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Asano et al (US Pat 6834948) discloses a color ink jet recording apparatus.

Nakajima (US Pat 20030222961) discloses an image recording method, energy radiation curable ink and image recording apparatus.

Caiger et al (US Pat 6145979) discloses an ink jet printer with apparatus for curing ink and method.

Rezanka et al (US Pat 5371531) discloses thermal ink-jet printing with fast and slow-drying inks.

McCann et al (US Pat 6003988) discloses printer architecture.

Suzuki et al (US PgPub 20030184632) discloses an ink jet printer, ink jet head, and image forming method.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonard S. Liang whose telephone number is (571) 272-2148. The examiner can normally be reached on 8:30-5 Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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3/31/06
MANISH S. SHAH
PRIMARY EXAMINER